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Abstract

A variety of recent policy conferences addressing resource extraction and rural development in Asia have highlighted the need for rigorous interdisciplinary research on the challenges of managing artisanal and small-scale mining. While much has been written about how rural communities can be negatively impacted by mining, very little research in Asia has focused on the diversities of rural socioeconomic challenges among populations of small-scale miners or on institutional options for regulating mining groups that have long operated outside regulatory frameworks. This article examines the complexities of addressing unlicensed gold mining in Cambodia, focusing on the linkages between rural livelihood dynamics, environmental goals, legal concerns and institutional dilemmas in particular areas where resource access has been negotiated by different groups, including local Khmer mining communities, migrant miners and large and medium-scale companies. Drawing on cases in two provinces, Kratie and Ratanakiri, the study examines why a nuanced approach is needed that takes into account multiple types of extraction activity and multiple perspectives on how rural stakeholder participation could work in the extractive sector. The article analyzes policy options to sensitively address rural development dynamics in mining areas, suggesting key roles that future research can play in generating useful contextual knowledge that can help improve resource regulation, rural livelihood support services and regional land use planning.

Key words: small-scale gold mining; rural development; environmental governance; extractive industries; rural livelihoods; Asia

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1. Introduction

In recent years, debates about resource extraction and rural development in low income countries have pointed to the need for rigorous research on the challenges of managing artisanal and small-scale mining (ASM). ASM is often defined by the use of rudimentary mineral extraction technologies and practices, and most ASM activity around the world is unlicensed (Hinton, 2006). Although widely thought of as "illegal" and portrayed as a "rural problem," such mining activity provides livelihoods to growing numbers of rural people (Telmer and Veiga, 2008; Hilson, 2010). 80-100 million people depend on ASM for income in over 60 countries throughout Asia, Africa and South America, directly supporting at least 15 million gold miners in addition to millions of other people engaged in jobs generated from the rural economic contribution that ASM makes (Telmer and Veiga, 2008). ASM produces around 20% of global gold production (MMSD, 2002; UNEP, 2002), and a growing number of studies note that people are not only "pulled" into this sector due to high gold prices; rather, many people are "pushed" into the sector due to critically limited employment opportunities (Banchirigah, 2008; Hilson, 2008; Hilson, 2010; Veiga et al., 2006; Spiegel, 2009). Socioeconomic, institutional and environmental dimensions of the sector vary significantly from country to country and region to region. Such dimensions can also vary significantly within the same rural region, as multiple kinds of artisanal, small, medium and large scale mining may co-exist together or in close proximity.

In 1999, a report published by the International Labour Organization described the complexities of interpreting the ASM sector in the following terms: "Small-scale mining means different things to different people. To some it is dirty, dangerous, disruptive, and should be discouraged. To others it is profitable, productive or simply the only way out of poverty" (ILO, 1999, p. 6). This statement reflected an emerging awareness among international agencies and governments that small-scale mining created risks and opportunities that needed to be addressed in tandem through integrated rural planning processes. On one hand, growing concerns have been raised that unsound mining practices (whether from large-scale, medium-scale or small-scale mining) can lead to serious negative impact on rural environments; gold

mining has been associated with land degradation, river erosion and pollution, posing health risks for gold extractors and people living downstream (Hentschel et al., 2002; Kambey et al., 2001; Swain et al, 2007). On the other hand, these risks cannot be understood independent from the socioeconomic drivers of the activity. Most ASM activities are conducted by poorly educated groups of people with little awareness of environmental health issues or of environmental laws (Hinton, 2006; Spiegel, 2009b; Spiegel and Veiga, 2005; Spiegel et al., 2006). A study by Burke (2006) indicates that strict mining and environmental laws in Asia have been ineffective for many reasons, including the fact that poorer rural workforces are usually not aware of legal requirements and not supported by public services or training programs. That study notes that "small-scale mining's illegality makes regulation an impossibility" (p. 224), suggesting that strategies to regulate artisanal miners would offer far more promise than attempts to outlaw such mining activity completely.

In the past decade, governments in Asia, United Nations agencies and the World Bank have hosted a number of conferences to discuss challenges related to unlicensed mining activities (UNEP, 2011; Murao, 2009). Mining policy research, nonetheless, has overwhelmingly focused on issues related to large and medium sized industrial mining development models. Measures to address artisanal and small-scale mining continue to receive a much smaller share of the focus at the policy level and in the research community. This article focuses on issues in Cambodia, a country where mining policies are in the early stages of development. Although many Asian countries significantly expanded their mining industries in the 1980s, years of war, conflict and political instability in Cambodia until the late 1990s prevented the development of its national mining sector policies, which only began to take shape in the new millennium. Certain low-tech forms of artisanal gemstone and gold mining have been undertaken in Cambodia for centuries; but to a significant degree, Cambodia is a country where it is still too early to assess the extent to which modern mineral development strategies – following Cambodia's 2001 Mining Law – are working. While numerous licenses have been issued to mineral exploration companies in the past five years, and while many rich geological deposits have been found across the country, most of the licensed company activities are currently in an

exploration and study stage (Browne et al., 2011). Meanwhile, virtually none of Cambodia's active gold mining activity has been licensed, and very little research has been done to date to assess different options for proactive mining regulation.

As the Prime Minister of Cambodia noted in his speech at the *First International Conference on Mining in Cambodia*, held in 2010 in Phnom Penh with support from the United Nations Development Programme, research on mining issues needs to become one of the priorities in the country's future plans for rural development. His speech also stated that "the mining sector is by no means the only option in the course of Cambodia's development" (His Excellency Hun Sen, 2010), noting that different types of rural economic sectors need to understood in connection with each other and that curbing illegal activities needs to be a priority along with promoting sound environmental stewardship. Recognizing these concerns, and recognizing the vital role for an interdisciplinary, context-specific understanding of the mining/rural development interface, this study was developed to examine options for addressing different types of rural labour dynamics in small-scale gold mining areas. The article examines multiple different configurations of unlicensed ASM activity and how a nuanced understanding of rural labour in extraction areas can enhance policymakers' and scholars' approaches for engaging contemporary regulatory complexities. The study highlights dilemmas and options when balancing rural livelihood concerns with environmental management concerns and other related types of rural socioeconomic concerns.

Multiple methods were employed in this study, including a review of available research literature, an analysis of policy and legal documents, as well as stakeholder interviews and field assessments in mining regions in two provinces. Visits to mine sites were conducted by the author in May and June of 2010 in Ratanakiri Province and Kratie Province, and these interviews were complemented by a set of interviews conducted in Phnom Penh. The author's research was funded by the United Nations Development Programme (UNDP) with support from the Ministry of Industry, Minerals and Energy (MIME) in Cambodia, and the emphasis of the fieldwork was on gathering perspectives of strategies for the purposes of proposing practical options to enhance rural development strategy. The interview process explored experiences

and views of people working in small-scale mining and in managing the sector (in the mining, environmental and finance departments), mineral exploration companies, non-governmental organizations, researchers and other groups. The first section of the article provides an overview of existing challenges in the management of gold mining, highlights recently shifting trends in the socioeconomics of ASM activity in Cambodia and evolving implications for regulatory institutions. The second section examines findings from fieldtrips in Kratie and Ratanakiri, highlighting very different cases of rural labour challenges related to gold extraction. The third section provides an analysis of institutional options to address different kinds of gold mining and possibilities for future development, outlining why nuanced analysis is needed, engaging multiple perspectives on how rural stakeholder participation in the mining sector may be enhanced. It also identifies vital roles that future research can play in proactively engaging the complexities of resource regulation, rural livelihood support and regional planning in mining areas.

2. Gold Mining in Cambodia: Rural Labour Complexities and Sector Management Challenges

2.1. Overview of the Sector

The social and economic dynamics of mining have changed considerably in Cambodia over the past two decades. Le Billon and Springer (2007) examine how in the early 1990s, the Royal Government of Cambodia imposed moratoriums on the extraction and export of minerals as well as timber; this was due to concerns at the time that these resources were used to benefit insurgents and undermine legitimate state governance processes. In current times, while artisanal and small-scale gold mining is not licensed and operates outside a regulatory framework, it is in many cases a livelihood activity for rural populations who depend on this activity as a source of income (Sotham, 2004). The sector involves diverse groups of workers who use various methods to extract gold, either by panning for alluvial gold using simple tools or by mining primary ore (hard rock) with more sophisticated technologies. In some cases, miners use explosives and chemicals such as mercury.

Reports indicate that there has been a trend in the past ten years towards increased levels of technological mechanization and chemical use in gold mining in various regions of the country (Murphy et al., 2008; Cooperation Committee for Cambodia, 2010). The nature of this activity varies substantially from site to site. In some cases this is a seasonal/temporary activity, while in other cases it is a full-time traditional activity that families have done for generations, as in Rovieng District in Preah Vihear for instance (IPNN, 2010). Given the substantial variation in practices, a working premise early in this study was that research approaches need to take into account multiple types of artisanal and small-scale mining and that institutional policy analysis would need to be sensitive and highly responsive to local contextual priorities.

The number of artisanal and small-scale miners in the country is unknown, but one study in 2004 estimates that tens of thousands of people were directly working as miners in Cambodia's ASM sector (Jayawardena, 2004). A different study, led by the Director of the Department of Geology at the Ministry of Industry, Mines and Energy, suggested that the population of artisanal and small-scale miners might have been between 5,000 and 6,000 (Sotham, 2004).[1] High prices of gold and high rates of joblessness may have led to an increase in gold mining activity in Cambodia in recent years. Challenges in the small-scale agricultural sector and lack of secure land title, for instance, have led to limited income sources in many areas (Adler et al., 2009; Baird and Dearden, 2003). This has affected patterns of entry into the rudimentary mining workforce, and while no other studies have been conducted to specifically assess recent labour trends in this regard, interview evidence collected in the present study suggests that a substantial proportion of people involved in ASM had previously attempted farming but found mining to be a more economical option.

Sotham (2004) notes that gold miners in Cambodia can be broadly categorized into four key groups of people: local people; poor migrant workers; wealthy migrant miners; and concessionaires. His assessment indicates that, generally, local people and unskilled migrant workers earn around US$ 1.5 to US$

[1] Some interviewees suggested that the ASM workforce size might be higher than this figure and that a detailed multi-sited assessment across all provinces would be useful to come up with an updated national estimate.

2.5 per day, while skilled workers and supervisors earn slightly more. Wealthy miners that own machinery or excavations can earn around US$ 10 to US$ 15 per day. Sotham (2004) also suggested that there may be shifting patterns in the rural labour dynamics of mining areas, noting that "although there are many independent gold mining individuals and small groups, it would appear that the number of independent miners is decreasing in the face of increasing control over mining areas by concessionaires and wealthy miners" (p. 11). Some of the patterns of poverty-driven labour among migrants and local workers are described in the following passage (drawing observations from selected sites):

> "It is estimated that around 80% of gold miners can be classified as poor, in that they mine ore only using hand tools and own no machinery, not even water pumps. These miners, when working independently, can exploit only the surface or shallow ores deposits and process the gold using either panning or manual sluicing. All local people and most migrant workers belong to this group. During the mining season they commonly work for wealthy migrant gold miners. During the rainy season the local miners work in agriculture and the poor migrant miners continue to mine for themselves" (p. 16).

The kind of work done in the artisanal and small-scale gold mining varies but typically involves digging, ore excavation, ore transportation, ore grinding and crushing, amalgamation work to extract gold particles, and other tasks that are sometimes shared amongst groups of miners. Rural labour structures vary in relation to equipment, and in numerous cases the mining activities are concentrated around fixed ore processing centres where the owners of the equipment allow miners to process the ore for a fee, with the fee sometimes being a sizable percentage of the revenue generated from the gold production. Sotham (2004) explains that "while many provincial authority officials are aware of both the scale of mining and the pertinent regulations, these regulations in reality are only weakly enforced," adding that, "Potential explanations include the power of the individuals running the mining operations to exert influence over the relevant authorities, and a lack of funding and

resources for enforcement activities" (p. 11). In addition to these factors, the geographical remoteness of many mining sites makes it particularly difficult to monitor the activities.

Nonetheless, a few notable efforts have emerged in recent years to promote certain limited kinds of monitoring. With support from the United Nations Environment Program, the Ministry of Environment undertook assessments to monitor environmental health issues related to mercury use in mining communities, monitoring the health of 12 families involved in mining in Kampong Thom province, 12 families involved in mining in Kratie province, and 12 families in Ratanakiri province (Vibol, 2008). Murphy et al (2008) also examined multiple small-scale mine sites where the misuse of mercury was shown to be a significant concern for the health of mineworkers; it was recognized that, depending on where the tailings are discarded, surface water and groundwater pollution can be additional risks. According to one interviewee, the government developed a trial training program to encourage safer gold extraction practices in the late 1990s in Ratanakiri province but the program was very brief and limited in scope. Though gold mining has been a longstanding livelihood activity in certain regions, regional monitoring and technical assistance programs have not yet been put into place due to limited institutional capacity.

2.2. Regulatory Context for Artisanal and Small-Scale Gold Mining

The Mining Law of 2001 (Law on the Management and Exploitation of Mineral Resources) provides the current framework for all mining licenses in Cambodia. It asserts that all mineral resources are considered to be property of the State (Article 2) and that all mining activities are considered illegal unless permission is granted by the Ministry in charge of the minerals sector, which is the Ministry of Industry, Mines and Energy (MIME). The law includes 6 types of licenses: the Artisanal mining license; Pits and quarry mining license; Gemstone exploitation license; Mineral cutting license; Mineral Exploration license; and Industrial mining license (Article 11). The artisanal mining license ostensibly provides opportunities to bring some of the illegal ASM activity into a regulated framework, stipulating that the artisanal license

"may be issued only to persons of Khmer nationality for the purpose of conducting the exploration and exploitation of mineral resources by using locally available common instruments and their own labor or with the help of family with no more than 7 (seven) persons" (2001 Mining Law, Article 11). However, no artisanal mining licenses have been issued to date. One interviewee mentioned that he thought 3 licenses were issued, though it was not confirmed. At the moment, this legal clause therefore does not appear to function as an active governance tool.

One partial explanation for this is that there have been no policy directives or funding allocation measures to date for conducting mining education programs in rural ASM areas, which could help facilitate licensing and regulating of artisanal miners (and help ensure that artisanal miners would be able to see incentives for registering). Another partial explanation is that the restrictive nature of the above legal definition may limit the permissible technologies and practices to such a degree that the law has become incompatible with the current field realities. In addition to the above restrictions which suggest that non-family members cannot work together legally and that only "locally available common instruments" (which are not defined in existing policy) are permissible, the above license would be limited to "explore and exploit mineral resources found only in loose state in silts, gravel, sand and rock, and within a demarcated area no larger than 1 (one) hectare, and to a maximum depth of 5 (five) meters" (2001 Mining Law, Article 11). Whether policymakers update the law to create a means for legalizing and regulating *semi-mechanized* forms of *small-scale* mining (going beyond non-mechanized artisanal mining) remains a looming concern in light of the increasing levels of semi-mechanization in recent years. Gold placers and shallow ore deposits are near to being exhausted in many parts of the country, and while the law currently forbids digging below 5 metres, attempts to regulate such activity may inevitably fail if licensing provisions do not sufficiently adapt to the reality that more sophisticated forms of small-scale mining are an increasingly common pattern.[2] To contextualize the restrictive definition in

[2]This trend towards semi-mechanization has been similarly observed in other studies elsewhere in Asia, as discussed, for instance, by Baker et a. (2007) in the context of Lao People's Democratic Republic. Baker et al. (2007) draw attention to the impacts that migrating populations and foreign entrepreneurs have had on ASM technology, noting, "traditional, mostly alluvial mining at the family and community level continued and more

Cambodia's law, it is worth taking note of the fact that in Indonesia's mining laws for instance, "community mining" – i.e. ASM in Indonesia's national legal context - allows for digging up to 25 metres of depth.[3]

Various interviewees in Cambodia stressed that, in order to curtail illegal activity and mitigate serious risks, small-scale miners should be legalized in certain cases and organized through capacity-building and education programs. One interviewee noted, "These miners need to be trained to improve the gold extraction and processing methods and educate them to make them more responsible" (Interview, June, 2010). By contrast, another interviewee was concerned that "if people start to get licenses to do this [small-scale mining], many more people will come to do mining" (Interview, June, 2010), adding "…if they get an artisanal mining license, they might end up wanting to do small-scale mining with the bigger [potentially more dangerous] equipment." Clearly there are numerous views, regional contexts and types of mining to be considered. Limited government human resources and institutional capacity can make it difficult to assess these contextual dynamics at the local level in remote areas. Such limitations also make it difficult to promote awareness of legal procedures and technological standards within mining communities themselves. Sometimes it can be difficult to promote dialogue between illegal miners and authorities, particularly when military control in mining areas inhibits access by technical staff from MIME into the sites; this is a problem noted by Sotham (2004) in his field study and again encountered during interviews in the present study. The involvement of multiple types of workers in the same areas makes it all the more difficult to distinguish "traditional" artisanal mining from more sophisticated small-scale mining.

Such distinctions are especially important to make because not all artisanal and small-scale mining activity is "anarchic" – a word which is frequently used in newspapers to describe the sector as a whole.[4] Some of this activity goes back decades as a cultural tradition, and in some cases it may be more appropriate to

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sophisticated mining operations were recently introduced and have expanded in isolated areas, presumably with funding and technology from entrepreneurs from other countries such as Vietnam and Thailand" (p. 4).

[3] Indonesian Law No. 4 Year 2009 on Minerals and Coal Mining.

consider particular segments of the sector to be "informal" rather than "illegal." Lahiri-Dutt (2004) suggests that "informal" is a more appropriate term than the word "illegal" in many contexts in Asia, since the lack of legal status may have to do with rural marginalization and lack of access to licenses than with local disinterest in obtaining a license. Though there may still be numerous cases where exploitative, illegal mining activities do need to be firmly addressed and phased out, various studies around the world have shown that benefits can and do accrue when governments, unlicensed miners and other agencies come together to improve local capacities for mitigating safety and environmental risks; this requires that governments are willing to provide education services to mining groups even if they are unlicensed at the time (Maponga and Ngorima, 2003; Chouinard and Veiga, 2007; Hilson et al., 2007; Sousa and Veiga, 2009; Spiegel et al., 2005; Spiegel and Veiga, 2010).

In 2010, government officials in MIME began developing plans to collaborate with the Ministry of Environment to travel to selected artisanal gold mining sites as part of an effort to assess mercury management practices. This represents a potentially significant step towards proactively engaging unlicensed mining groups in new ways. Some interviewees suggested that future initiatives such as this (focusing on environmental assessments) should be expanded in scope, involving stakeholders in mining communities in the process of developing contextual plans for educating workers about improved ASM methods and regulating - i.e. giving formal legal recognition to - ASM groups. As Cambodia has not yet had extensive experiences with such efforts, an important sentiment expressed by both government and non-governmental stakeholders interviewed in this study is that new and innovative pilot programs would be needed. Some interviewees suggested that new steps could take into account leadership structures involving local authorities and other stakeholders at the community level. Cambodia diverges from other countries with larger ASM sectors, such as Indonesia and Philippines, where policy models have been developed to regulate miners as cooperatives or as individuals using district-level governance approaches (Spiegel, 2011; Hinton, 2006).

[4] For example, see "Mineral anarchy reigns in Far-East Cambodia mineral resources exploration." *The Cambodia Daily*. Monday, October 9, 2006.

2.3. Regulation Challenges, Resource Access and the Notion of 'Working Together'

While illegal mining may arise in part because of the failure of mineworkers to acquire licenses, the notion of granting licenses to regulate ASM workers is especially complex given the limited availability of land and unclaimed resource concessions. Stakeholders interviewed in this study indicated that mineral concessions have, over the past five years, been granted to companies in regions where artisanal and small-scale mining groups live and work. This makes it unclear whether there could be land areas available for licensing ASM workers unless new policies are devised to facilitate sharing of resource access and working together between ASM workers and companies. In some countries, large-scale mining companies have co-existed in mutually beneficial ways alongside small-scale and artisanal miners in the same rural areas; the International Council on Mining and Metals (ICMM) stresses that this co-existence – this "working together" – should be encouraged in many types of cases and can even be beneficial for companies by helping to avert conflict (ICMM, 2009). At the moment, though, existing policies in Cambodia (and many other countries in Asia) have not created a mechanism for transferable mining titles, which prevents companies from readily relinquishing unused portions of their concessions - e.g. portions deemed uneconomical for large-scale mining but potentially suitable for small-scale activity. It should be noted that different companies have different patterns when it comes to working with rural populations and allowing and/or policing such populations in resource-rich areas during exploration stages.

Notwithstanding the fact that multiple parties are often in competition with one another over access to resources in concession areas, some mining company interviewees noted that the presence of artisanal and small scale miners can be helpful in identifying good geological prospects in rural areas. Artisanal and small-scale miners are frequently "free prospectors" for companies, as the companies often use the existence of unlicensed gold miners as indicators for where to focus for geological exploration. When it comes to shifting from to the production stage of

mine development, though, concerns have been raised that some companies may attempt to move the poorer miners out using improper means. In many countries, military force has proven to be a tactic that leads to negative results; concerns about intimidation, conflict and shootings have been discussed elsewhere (Andrew, 2003). In addition to such potential risks, poorer miners may feel they were not ever given a chance to apply for a license and may feel a sense of entitlement to the area if they have lived and worked there for many years. As competing claims to an area can lead to conflict, mediation processes would likely be a more appropriate policy option than policing with force. Past literature stresses that promoting participatory stakeholder dialogue early on in the process of licensing (for mining and exploration projects) can help prevent conflict in mining areas (Andrew, 2003).

When pursuing stakeholder consultations, it is also important to note that various specific stereotypes about illegal gold miners have arguably inhibited a clear and productive assessment of the ASM sector. The negative reputation for ASM-caused pollution and other problems can be misleading in many cases, since some miners may not use chemicals at all. Furthermore, ASM groups frequently have a negative public reputation for not paying taxes; yet, frequently poorer artisanal mining workers do in fact pay "informal" taxes as they may be forced to pay security guards and are hence trapped in the "illegal sector" as a consequence – as observed in the study by Sotham (2004) for instance and confirmed by interviews in the present study; these are problems, interviewees suggested, that could be averted by formally legalizing some of the operations. In some cases artisanal miners have been forced to pay informal taxes to companies in order to be able to work in concession areas as well as making payments to local authorities. Analysts may ask: Who exactly are the "illegal miners" who need to be targeted by a government as a priority? This question is not simple, but stakeholders interviewed in this study widely suggested that holding the wealthier miners, concession-holders, middlemen and equipment owners accountable for any legal infractions should be a priority, since they (unlike most mineworkers) have economic means to ensure they comply with laws and can - at least sometimes - be more easily monitored. Government officers

whom I interviewed pointed out that labour exploitation is a serious concern in addition to environmental and safety concerns.

The Ministry of Industry, Minerals and Energy has taken steps in 2010 in initiating dialogue through various meetings with relevant ministries, international agencies, NGOs and experts, addressing the many challenges of ensuring that stakeholders in affected communities participate equitably in the development of mineral resource strategies. Discussions raised at the "First International Conference on Mining in Cambodia" in 2010, for instance, highlighted this challenge and recognized, among other issues, that one cannot conceptualize the challenges of "illegal mining" without conceptualizing the challenges of developing and implementing mining policies in ways that give sufficient protection to the rights of indigenous people. In some cases, interviewees in my study indicated that indigenous people are not aware of which companies were in the region but have been affected by the companies nonetheless and told to leave. Clear information sharing and stakeholder consultation processes are evidently needed. Various interviewees also note that under existing law, companies have no obligation to hire local workers and tend to hire few local workers when they do so (for occasional tasks such as bush clearing).

As in many countries in the Asia Pacific region, government authorities in Cambodia are currently in the process of revising policies and future research is needed on each of these complexities, to try to ensure that mining (whether large-scale, medium-scale, or small-scale, etc) leads to rural benefits and that unwanted impacts are minimized. Research in mining areas has a crucial role to play in moving towards best practices. Conducting research in the field and facilitating dialogue among stakeholders can help to shed new light on the evolving nature of mining sector challenges and their complexities for rural development planning. With this in mind, in the next two sections of this article, case studies in Kratie and Ratanakiri (see *Figure 1*) are presented based on fieldtrips designed to examine how a nuanced understanding of unlicensed extraction and rural labour might lead to new possibilities for institutional engagement. While these sites are not necessarily representative of the whole country and though the research was limited (based on a

specific time period, with field-level interviews conducted in May and June, 2010), the two cases show how labour dynamics in gold mining areas are diverse in Cambodia, revealing the need for a multi-pronged strategy nationally and a contextually adaptive regional approach for studying and regulating the mining/rural development interface.

Figure 1: Map of Cambodia showing locations of Ratanakiri Province and Kratie Province

3. First Case Study: Mining and Rural Labour Dynamics at a Site in Kratie Province

Sambo District is located in the northern part Kratie Province and the mine site visited in this district is located approximately 45 km northeast of Kratie provincial town. In the area visited, artisanal and small-scale gold mining is not licensed but supports the livelihoods of around 500 people, where families have done mining for several decades, going back to the 1970s. Most of the miners here in the region are Khmer. This region had been occupied by the Khmer Rouge until the 1990s (after re-unification of the country, some former soldiers were living there), and other newcomers came in the 1990s. There are also some Vietnamese small-scale miners working there now as well.

The technological dimensions of the work in this area vary, but the interviews indicate that supporting efforts to strengthen the skills and capacities of the workers in this area could be a very important strategy to enhance practices. Gold extraction appears to be the main source of income for many people in this specific area that was visited. Heaps of ore are currently being processed using basic technologies. No mercury or cyanide is used by the miners who were interviewed. Some (not all) of the workers in this area used to use mercury and cyanide and they reportedly stopped using these chemicals after MIME officials instructed them not to. A carpet is now used in conjunction with the sluice as a mercury-free gold separation process. Some artisanal miners used to use explosives and go 80 metres depth in their digging, but this is reportedly no longer being done due to the instructions received from authorities.

Vietnamese people who are not from the area sometimes come to the area to purchased the tailings for processing (using Vietnamese equipment), but this does not occur regularly, so the local artisanal miners are processing the ore themselves. While, currently, the workers are working illegally, a company recently procured the license for exploring the area, as discussed below. Ambiguities about “informal resource ownership” also emerge, as it was reported that 1 square kilometer was owned by a Cambodian within the concession; this was not legally registered but it was reported that this was an unofficial arrangement made with certain individuals.

For their part, the unlicensed miners indicated that they were told to stop doing any further mining (excavation work) but that they would be allowed to process the remaining ore that is not yet processed. Their livelihood activities therefore have an uncertain future.

The settlement where the artisanal miners live is located within 400 metres from the buildings of a Chinese owned company, which were very recently built (within the past two years). The company (called Xing Yuan) currently has the mineral exploration rights in this area; the concession is 28 square kilometers and encompasses the total area where the unlicensed miners work and live. This company is reportedly the 4th company to have the mineral exploration concession for this area, the three previous one being a different Chinese company (most recently), a Korean company and a Canadian company. The previous companies did not pursue active exploration to the same extent if at all. Xing Yuan has developed various strategies for exploration and indicates that the region is endowed with gold, copper and lead deposits. Drilling has commenced recently on the property, going down 200 metres depth, and ores have been assessed by the company using spectrometers and fire assays. When asked, the company representatives noted that 80 people work as part of the company, including 50 Chinese workers and 30 non-Chinese (mostly Cambodian) workers. When asked if there were any work opportunities that the company recruits the local community for, the company representatives noted that there is occasionally collaboration for cutting trees and construction (though this was not confirmed and the company-community relationship is evidently limited). Meanwhile, in one interview, a representative of the Chinese company here has proposed evicting the artisanal miners. In another interview, the Provincial MIME Director conveyed a sensitive view of these contextual socio-legal complexities, noting that local authorities, the company and the community must come together to discuss options and that a win-win solution is needed.

When asked what the largest challenge is for the mineworkers, one miner answered that the largest problem was the prohibition on mining activity and the threat of being forced to resettle elsewhere. When asked if the artisanal miners

would like to get a license to be able to operate legally, the answer was that they miners would like to do so; it was also noted that the local miners who had been there for many years had never been able to acquire a license. As there are competing claims to this area's resources, the government is faced with dilemmas in coming up with an equitable solution.[5] One policy option could be to allow the artisanal miners to stay on the land, as they have worked here for many years. This would likely require setting geographical boundaries and establishing a regulatory plan for the activities. A related strategy could be to develop plans for sharing the concession area with the new company that has come to this area, to create mutual benefits between the company and the people living there. It appears that the surrounding areas beyond the boundaries of this concession are also geologically rich, but licenses have been given to other companies already.[6] The Chinese company in this particular area could be encouraged by the government to provide more jobs to people from the local settlement and to work on sharing the region with the people living there, focusing on the mineworkers who were there for many years. Another option would be to facilitate a consultative process to encourage a resettlement of the people living there. Regardless of the strategy taken, robust stakeholder consultation would be needed both to decide the appropriate course of action and to develop an action plan for implementation.

A MIME geologist is currently stationed at the company's building to monitor the company activities and acquire information on the geological assessments. If geological knowledge could help to find the suitable mineralogy for artisanal/small-scale gold mining in this area, this could potentially help towards finding a resolution. The MIME Provincial Officer, while recognizing the limitations on the Chinese company's consultative process with the ASM workers to date (and the lack of clarity in the future plans of the company in this regard), noted that a road built by the government in 2002 has made it relatively easy to bring in government overseers to monitor ASM; this level of road infrastructure is not in place in most other parts of the

[5] These dilemmas are rendered even more complex due to competing pressures from other the activities of other companies - agri-businesses - in this region, which also compete with the mining companies and unlicensed miners for some of the overlapping land areas.

country where mining occurs. However, he noted "the company cannot just move these people out. There needs to be discussion." He also noted that, "The government and the different people involved in this should sit together…So far, we do not have a clear step" (interview, June, 2010). According to interviews with government staff, the company has not yet clearly defined a company/community consultation process for the exploration activities or for future mining development activities in this specific area, and meanwhile, it was reported that people in the local settlement demand to stay on the land. For 2 years, litigation has been pursued, though without a clear resolution, and protests have reportedly been made by the people living in the settlement.

Promoting a resettlement of the dwellers who currently reside in this area might not be the ideal option, but if such an option is considered, a much more detailed local assessment is needed. Based on interviews, it seems evident that government actors would support the idea of compensating the local people if such an option is pursued, but there is no clear way of deciding the compensation at the moment. National policies on this likely would need to be clarified in the future regardless of this specific case, and past reports have drawn attention to the complexities of identifying who is eligible for compensation and appropriate compensation levels (NGO Forum, 2008). The Provincial MIME officer noted that the local authorities would need to be involved in deciding the appropriate compensation. One interviewee suggested that local authorities might want the company to build a road as compensation (rather than cash compensation); but others suggested that it seems doubtful that building a road (as a compensation strategy) would benefit the artisanal miners who live there, especially if these workers were to be relocated elsewhere. (One could argue that the development of roads contributed to some of the local frustrations in the first place, since *roads* led to increased developments from outsider companies.) It could be reasoned that other kinds of social services and skill development/training would be far more appropriate and valuable to the artisanal miners – and far more effective as a way to encourage

[6] In Kratie Province, there are currently 14 companies licensed to do mineral exploration, though none doing active mining.

improved livelihoods practices. Stakeholders interviewed also stressed that any discussion about relocating the miners should also take into the account the potential limitations of Social Land Concessions (SLC); SLCs were suggested as one potential option for relocation but some analysts have suggested that such concessions are sometimes not ideal for farming or other economical purposes.[7]

In summary, these complexities all indicate that there is a need for rigorous community consultation processes with multiple stakeholders involved when determining the appropriate resource management models. Rather than seek relocation, policies to relinquish certain portions of the currently licensed area to allow for shared resource access among other stakeholders may be a far more advisable option in order to mitigate conflict risks and cultivate appropriate solutions. According to existing national policies, exploration companies are expected to relinquish a certain percentage of concessions every two years; thus, a "relinquishing" approach could be considered in order to create designated areas for artisanal/small-scale mining. It needs to be stressed, at this point in time, that the company's exploration agreement with the government has not been turned into a mining license. Promoting stakeholder consultation in a robust, transparent and highly participatory way would undoubtedly be vital to ensure an equitable and sustainable way forward is found.

4. Second Case Study: Mining and Rural Labour Dynamics at a Site in Ratanakiri Province

Ratanakiri is widely recognized to have some of the richest gold deposits in Cambodia. There are more than 20 mineral exploration concessions in the province,

[7] A social land concession (SLC) is a legal mechanism established under the Cambodian Land Law of 2001 which aims to legalize the transfer of state private land to individuals or community groups for social purposes, in particular for residential and agricultural land. Mund (2006) describes how "SLC procedures require a land suitability analysis for agricultural services and resource needs….Major constraints for agricultural production by poor farmers are limited commercial inputs and a low level of technology. Under these circumstances current farming operations face difficulties on unfavorable land or soil qualities that are difficult to modify. Qualities to be considered for a suitability rating are e.g. soil fertility, water retention capacity, soil depth, slope and susceptibility to erosion" (p. 3). Additional challenges should be noted if policymakers have the intention of relocating artisanal miners to social land concession areas that are not geologically well suited for artisanal and small-scale mining. If this kind of approach (relocation) is considered, it would be crucial to ensure that capacity-building programs are actively working to help relocated workers to have the skills, training and infrastructure to be successful in new livelihood activities.

although none of them are officially producing gold or engaged in mine development at the moment (just exploration at present). Little has been written about the precise extent of the artisanal and small-scale gold mining activities, but environmental degradation and pollution concerns have been put forward by some stakeholders as rationales to close down illegal mining activities. In 2004, the District Governor initiated a campaign to arrest illegal gold miners in the region visited. This campaign appears to have been ineffective as mining activities have continued since then. In 2010, media reports described how 20 members of a law enforcement squad (soldiers and police) conducted raids in villages where artisanal mining was widespread (Naren, 2010). The implications of these crackdowns have generally not been regarded as successful either though; interviewees in my study indicate that much of the illegal mining continues unabated.

The site visited on the fieldtrip is in the Phnom Pang area, an area where small-scale mining activity has been present for decades. Some of the unlicensed miners in the area studied are Vietnamese and some of the workers are from other areas of Ratanakari Province and migrated to this area. Interviewees noted that some of the miners in the general area are indigenous people from nearby villages (though I did not meet them). Mining was said to have started in this particular site in the mid 1980s, when Vietnamese came to the area. A few of the Khmer miners interviewed noted that they had only been working as miners for 1 month and that they came to this area (traveling from other regions of the province) after hearing that gold mining here could be the basis for a successful livelihood. According to one of the miners, they were able to earn as much as 100,000 Riel/week, or approximately 100 US$/month. This would certainly be on the higher side of ASM earnings in Cambodia - compared with what mineworkers are believed to be able to make based on the estimates mentioned earlier (many miners elsewhere reportedly make US$ 1.5 to US$ 2.5 per day). Some of the workers had previously been farmers, noting that the success of farming was limited (depending in part on the rain). A boy who around 20 years old noted that there was a sense of adventure associated with mining. When asked if there were safety concerns, the main safety concern

articulated was that people who go down the 35 meter shafts could fall or be hit by falling rocks which are being lifted up by rope.

Mercury use and cyanide use have also been identified as risks in this area, though the miners who were interviewed did not seem to be aware of the nature of these risks. In some case, mercury is spread on copper plates and applied to all the ore. This is a practice known internationally to be one of the chief hazards of mercury use in ASM – but it is a practice that can be prevented if simple training is given to the workers to show them how to concentrate the ore before amalgamation, thus significantly reducing the amount of mercury used (Hinton et al., 2003; Spiegel and Veiga, 2010). With funds from an international NGO, Murphy et al (2009) conducted a study that detailed some of the health problems related to mercury use in this general area in Ratanakiri (see also Blacksmith, 2007). The Ministry of Environment has conducted some fieldtrips as well to assess mercury problems, but a representative from the Ministry of Environment suggested that resources were needed from the international donor community to be able to execute a training campaign on technology transfer issues. Some interviewees suggested interventions should also address marketing arrangements. At present, the economic benefits of the mining activity are distributed unevenly in this area, which much of it going to the owners of the equipment, who do not live within this mining area. A frequent revenue-sharing practice in this area is for 50% of the proceeds from the gold mining to go to owners of the equipment; 50% remains with the workers. Miners explained that a representative of seven mineworkers takes their portion of the gold produced to a nearby gold dealer (which in some cases is a licensed gold shop – and in other cases, an illegal gold dealer), and the workers rely on this representative to get the best price possible. Mineworkers in this area frequently do not seem to benefit from the true international value of the gold due to the current arrangement. Although equipment owners seem to gain the most in terms of profit, field visit discussions did not indicate that the profits are re-invested locally to improve the technology efficiency and safety at the site.

Unlike the situation encountered in Kratie Province, the miners interviewed in this site in Ratanakiri Province were not aware of a mineral exploration company on

the premises where they work. Thus, although a new Australian company has recently entered the area and begun exploration, as described further below, small-scale miners' concerns about power relations in the area seem to be currently more focused on actors who are directly involved in the illegal small-scale mining and gold trading processes (rather than land use competition with large mining companies). During a group discussion with government staff, one participant asked: If certain government authorities know who has the illegal equipment in this area, then why shouldn't they be able to arrest the owner? In response, another participant pointed out that sometimes certain authorities tend to raise revenue 'informally' by allowing this activity to continue. This seems to reaffirm the observation made by Sotham (2004) when he noted that illegal dealings are happening in many cases due to payments made to certain powerful businessmen, which perpetuates the illegality of mining. In some cases, this kind of institutional malfunction prevents policing. In other cases, though, institutional malfunction leads to what could be considered excessive military action. A story was relayed by one of the interviewees regarding military activities in March, 2010; in particular, a small-scale miner complained that some of the law enforcement agents (in this case, some agents from military units) acted unjustly and that he lost 4,000 US$ worth of equipment. His complaint was that a Chinese logging company paid military officers who intervened and destroyed equipment. He noted that his operation had 50 workers, at least 60% of whom couldn't find jobs afterwards (the interview was held three months after, in June). Although it was legally possible for logging and mining activities to co-exist theoretically, concession owners apparently have not been keen on sharing between mining and forestry activities, and the interviewee who was affected by the crackdown insisted that the following recommendations be taken into account: 1) Recognize that people have been working in mining for many years; 2) Recognize that military/police can sometimes make things worse; 3) Need to notify people in advance before police/military crackdowns occur; surprises are not appropriate.

Recently, an Australian exploration company (Summer Gold) began conducting soil samples, though discussions with the company geologist confirmed that the company had not started drilling. Prior to Summer Gold's exploration license,

a Chinese company (Eisan Development Company) held a Memorandum of Understanding with the government for exploring this area for six months (in 2005), though the results of that exploration activity (if any was done) are not known to the provincial government or to others. Summer Gold was reportedly drawn to this area after recognizing that this ore grade is high here, as evidenced by the number of artisanal miners in the area. According to the company geologist who was interviewed, 3 geologists are currently involved on this concession, including one from the company and two from MIME. The current exploration work has been minimal, going up to 30 centres of depth for soil samples, and the samples are then sent to Bangkok for analysis. When asked if there was any drilling, the company geologist indicated that drilling would take place after the rainy season, sometime next year (2011). Other interviewees suggested that it is quite possible that by the end of the next year, the company still would not have developed its mine plans. When asked if the company involves local people in its operations, it was that it had recruited 13 people from the village for small short-term jobs, including cooking, digging holes, and clearing the bush. Although the company geologist expressed the view that artisanal miners should not be able to stay there in the future once the company starts its active drilling and mining, he did recognize that the village settlement could stay. It should be stressed, at the same time, that the company's exploration agreement with the government has not been turned into a mining license and the exploration activities are still in an early stage.

Compared with the case study in Kratie, the case study in Ratanakiri presents a far more "remote" context, especially due to the noticeably poor rural road infrastructure. In part due to such challenges, very little research has been done to assess resource management tenure challenges related to gold in Ratanakiri. However, I found that different perceptions exist regarding the acceptability of different kinds of mining. Alluvial panning in the riverbeds is prevalent in other parts of the province, and though no interviews were conducted with panners, such gold panning is accepted by government authorities in some cases – even though not formally 'legalized.' More research in the future may help to ascertain the extent to which panning, artisanal reef mining and various other more sophisticated small-

scale mining activities contribute to the socioeconomic life of the communities. Research could also help to identify prospects for improving organization and socioeconomic planning at the local level and for adopting environmental health and safety measures, as well as the prospects for promoting alternative income sources and collaborative district-wide environmental management strategies. The Provincial MIME Director stressed that NGOs have a key role to play. He mentioned that NGOs such as Development and Partnership in Action (DPA), for instance, have been helpful in building capacity of communities to mitigate risks and advancing the governments' goals of strengthening information on environmental impact assessments.

5. Analysis of Key Principles and Regulatory Approaches

5.1. Recognizing different types of ASM and appreciating diverse rural labour dimensions

Based on the preceding analysis, various principles and approaches may be put forward to offer a framework for future dialogue. First and foremost, this study has shown that illegality needs to be understood through multiple lenses as there are diverse factors that contribute to unlicensed mining in Cambodia. In any given region, these factors might include a variety of complexities related to: lack of institutional capacity and high levels of unemployment; the lack of definition of "small-scale mining" as a category in existing mining laws - and hence automatic exclusion from formal licensing opportunities; and lack of knowledge of "artisanal mining" licensing procedures and lack of incentives to register. The factors may also relate to competition over resource/land access; limited communication between authorities and unlicensed mining groups; limited communication between companies and unlicensed mining groups; lack of alternative livelihood opportunities and of training in poor rural areas, and lack of accountability for certain powerful actors involved in the gold business. The experiences analyzed in Kratie and Ratinikiri indicate that new policy innovation is needed in the ASM sector, recognizing that strategies should be

adapted to suit different types of ASM contexts. While in some cases, measures may be needed for law enforcement to phase out certain illegal mining activities, in other cases, licensing and regulating ASM activity may be a far more effective and suitable approach. The case in Kratie, for instance, illustrates a scenario where small-scale mining activity has been a longstanding livelihood for families, highlighting the need to sensitively consider multiple policy options.

The particularities of each rural context matter a great deal, and as such, this study does not seek to prescribe all the solutions. Rather, it seeks to lay out analysis that can help offer a multi-faceted framework for discussing key principles and policy options. Generally, the field research has indicated that lessons learned from region to region offer vital knowledge that can be part of a continual learning process and feed into larger national policy reform processes. To date, the understaffed nature of the governmental institutions working to address mining have led to limitations in being able to facilitate effective rural monitoring and resource governance. In addition to expanding the MIME staff to monitor ASM activities, clear national policy directives could be put into place to help manage this sector. Such directives could formally recognize the importance of ASM as a rural economic activity and could clarify that certain elements of this sector warrant support while certain other elements of the sector do not. Creating a special government unit to address ASM issues could help in the future to bring regional government actors and other stakeholders together while providing oversight on policy developments to suit contextual priorities. Specific regulatory issues are discussed below.

5.2. Developing rural outreach programs and adapting regulatory instruments

This study has suggested that developing strategies to educate small-scale miners and build local capacities where they work could have key role to play in Cambodia. A major recommendation arising from interviews in both Kratie and Ratanakiri is that education and training programs should be developed to engage unlicensed groups of ASM workers – even before legal/regulatory complexities are resolved. Strengthening cooperation amongst various institutions is essential and

promoting capacity-building of poorer workers is a vital step in order to mitigate safety and health risks. Authorities may wish to adapt other tools and training manuals that have been used in other countries to ensure that they are culturally appropriate. Veiga et al. (2006) discuss training techniques that have been adopted in other countries, and experiences have shown that educating artisanal/small-scale mining groups to mitigate key risks is a crucial strategy from an environmental management point of view, *especially* in cases where the miners are not licensed and do not currently have knowledge of national regulatory requirements and safety standards.

Capacity-building programs could focus on "migrant" as well as "indigenous" mining groups and could include, for instance, practical education measures to address safety, health, and environmental risk management and other planning issues related to the elements listed in *Table 1*.

Table 1: Potential Topics for Education and Training

• Strengthening awareness of environmental risks and benefits of risk management measures, such as preventing mercury emission and backfilling pits
• Demonstrating technologies for either progressively reducing or eliminating the use of mercury (which can be economically beneficial for miners in addition to beneficial for the environment), eliminating the main pollution point sources (even if mercury is still used) and improving tailings management
• Adopting measures to eliminate major occupational health problems
• Improving ASM workers' income through more efficient gold recoveries
• Enhancing access to safer equipment and promoting technology sharing
• Strengthening ASM workers' organization (e.g. cooperatives)
• Implementing health care measures
• Improving sanitation and management of rivers/waters

- Developing alternative livelihoods besides mining where viable

The present study has also illustrated that there are many reasons to develop new licensing and regulation systems for small-scale gold miners in Cambodia, particularly in cases where the workers involved have a longstanding history of doing this activity or where a deep economic dependency exists on the activity. To effectively tackle illegal mining's risks, various countries have adopted national policies for integrating both non-mechanized artisanal mining and mechanized small-scale mining into a development strategy and environmental management framework (Hinton, 2006); though not all small-scale mining activities should be legalized in Cambodia, new policies at the national level could help greatly to resolve some of the legal complications that were pointed out earlier in the analysis with respect to the limited definition of "artisanal mining." A legal definition for "small-scale mining" could be developed in the future, enabling the regulation of certain forms of extraction that currently are not addressed under existing classifications. Such provisions could provide a legal framework for semi-mechanized extraction and could include licenses for cooperatives (they may not need to always be "family" members as the existing artisanal mining law stipulates) as well as individual license holders. An associated set of basic environmental, safety and health guidelines could be developed to accompany this new regulation, designed through participatory consultations with stakeholders.

Authorities may wish to select specific "pilot project" sites to focus upon in developing future regulatory efforts, and this study suggests that such places could be places where ASM has been a livelihood activity for many years, for instance, and/or where it might be difficult to phase out illegal mining due to deeply rooted economic dependency on the activity. Participatory programs could be developed to make ASM workers aware of opportunities to become licensed and ways of improving practices. Regardless of the regulatory approach, as Murau et al (2001, p. 1) note, "technological assistance…is an important activity to convert the small-scale mining into environmentally sound industry" – and the best strategy for environmental management in many cases may ultimately be educating miners, organizing them and supporting improved practices rather than putting resources into attempts to stop

them. Government officers could be tasked with duties to train miners in key areas. While simple technological solutions exist that can reduce mercury exposure and lead to more cost-effective operations, there are several challenges to their implementation; chief among these challenges is that government agencies have not yet established clear roles for assisting ASM workers. Interviewees also suggested the following:

- Inter-ministerial links could be formed to incorporate certain kinds of ASM issues into poverty reduction programs and to encourage the formalization of commitments by multiple agencies to improved economic, environmental and social performance in mining areas.
- Budgets could be established for participatory resource management projects and measures could be taken to identify of how mining revenues might be used to fund education/training programs to help mitigate the negative effects of illegal mining and find ways of harnessing positive contributions to the community.
- Partnership with other sectors (manufacturing, trade, agriculture, forestry, water, health, education, etc) may be vital to sensitize local, regional and national officials, and other organizations of key challenges and opportunities (the possibility for decentralized management of the sector could also be looked at in depth, to assess what roles district governance structures may play with regards to licensing, monitoring and other kinds of planning).
- Such partnerships could encourage community involvement in mineral resource management and related economic diversification efforts (increased government investments could be made to target skill-building for alternative livelihoods), particularly using participatory approaches that involve women and men, adults and youth.

5.3. Land management and mining company-community engagement strategies

This study also suggests that designating specific rural areas with gold deposits for ASM activities is a particularly important policy option. In numerous

countries around the world, governments are recognizing the need to designate specific land areas with gold deposits for ASM (Hinton et al., 2003; Hinton, 2006). In some countries, governments have set aside particular gold deposits for ASM and sometimes governments have taken measures to encourage - and in some cases instruct – exploration/mining companies to share concessions and to work cooperatively with unlicensed ASM workers who worked in the areas, particularly those who worked there before the companies came to the region (Mugini, 2009); this has not been done in Cambodia but this may help avoid conflict, make access to resource extraction opportunities more equitable and ensure that illegal livelihoods have *space* to transform into legal livelihoods.

From a regional planning point of view, there may be numerous "pro-poor" as well as "pro-business" reasons for supporting the formalization of unlicensed artisanal and small-scale mining and working with them in contested areas. As stressed by the International Council and Mines and Metals (ICMM), the international reputation of companies is put into serious risk when companies - or host country security forces – attempt to evict ASM populations, and various companies have found it beneficial to form partnerships with ASM groups to create mutually productive relationships and to prevent conflict (Hinton, 2006; ICMM, 2009). Hilson (2004) describes cases in other countries where "large-scale mining companies were initially awarded land but it was soon realized by mine management that a redistribution of property to small-scale miners was key to minimizing externalities" which included "costly disputes" (Hilson, 2002b, p. 155). In Cambodia, current tensions between companies and ASM workers exist in part because existing policies have not yet created a clear mechanism for transferable mining titles, which prevents mining companies from readily relinquishing unused portions of their concessions deemed uneconomical but potentially suitable for small-scale activity. Having in place systems of transferable mineral rights could facilitate the demarcation of these areas where appropriate, creating opportunities for ASM workers to obtain a license and thus legitimize their operations, which in turn may create a more stable climate for rural planning.

While actively seeking out suitable ASM areas on a context-by-context basis, some complementary national-level policy options include creating a public database

of all pending and granted licenses for mineral resource exploration and exploitation, which are updated quarterly; such a database can help to identify opportunities for licensing ASM. Furthermore, making existing geological information available to the public in accessible forms would help promote sound planning in this regard[8] this also would help considerably at promoting investment and encouraging continuity and expansion of mineralogical knowledge in between the activities of different short-term exploration companies. Companies could be encouraged to identify suitable geology for ASM during their feasibility studies. The ICMM has proposed that companies assess a number of specific questions when they enter areas where ASM workers operate (see *Table 2*).

Table 2: Key Issues for Analysis by Mining/Exploration Companies When Considering Developments in ASM Areas

• Was ASM activity present before the commencement of the exploration/mining activity?
• Is the ASM activity escalating, declining or stable?
• Has the company engaged with ASM miners to date? On what basis (e.g., security concerns, loss prevention, community development programs, stakeholder engagement programs)?
• Does the exploration/mining team know the grade of the mineralization being mined by the ASM miners? Have the ASM reserves been estimated, and how long can ASM activity continue?
• Does the company's community development team have a sense of the community involvement in the ASM activity? Are the miners from the region, or have they migrated to the area?
• Are the drivers for ASM well understood in the area – e.g., is there a

[8] In many regions of Cambodia - as in many other countries across Asia and around the world, not all of the areas demarcated under mineral exploration concessions are likely to be mined by the concession holders in the foreseeable future. Some areas might not be suitable for bulky large-scale mining equipment and might be especially suitable for small-scale mining, a principal example being the reprocessing of tailings and waste dumps, which are normally only economically viable on a small-scale.

tradition of mining in the local population, are high metal prices prompting an expansion of the ASM activity or has worsening poverty triggered a greater reliance on ASM mining?
• What is the approximate size of the primary and secondary economies associated with ASM activities?
• What are the obvious risks to the company, and what are the drivers for engagement with ASM?
• What are the obvious risks to the local community?
• What are the obvious risks to the ASM miners from their current practices?
• What are the drivers for ASM miners to engage with LSM?
• What opportunities could be pursued and prioritized for empowering marginalized ASM groups (e.g. access to land/resources, technology assistance, health promotion, mineral marketing services)?
This initial review may help to highlight some of the key gaps that may need to be addressed by companies as well as governments through socioeconomic baseline assessments.

(Adapted from ICMM, 2009)

Cheshire (2010) stresses that mining companies vary substantially in terms of the commitments they demonstrate toward community-led development. Some international mining companies in Asia have established programs for technology training and environmental risk education for ASM workers. While certain companies may resist this type of proactive local engagement (as some NGO interviewees stressed), some of the world's more experienced companies have experiences with educating and training unlicensed miners as part of a local development platform (ICMM, 2009). In Indonesia, for instance, a gold mining company recently received international praise for developing rigorous community development programs and even creating a new NGO as well to work with artisanal gold miners in Central Kalimantan; Sulaiman et al (2007) discuss some of the positive outcomes with these efforts in promoting environmental health awareness and assisting miners with

technology transfer enhancement to reduce mercury use (Sulaiman et al., 2007).[9] Future institutional policies in Cambodia could be adapted from such approaches to encourage positive community engagement.

5.4. Local dialogue on legal accountability and law enforcement

Part of any effective strategy to address unlicensed gold mining also requires developing action plans for holding concessionaires, small-scale mine owners and equipment owners accountable for breaches in the law. In many cases, although workers at an illegal mine are temporary and nomadic, the owners of the equipment and the concession holders remain constant. Hence, it makes sense to prioritize attention on the more powerful actors when looking at issues of illegality. As interviewees stressed, efforts to enforce legal standards need to be pursued in a sensitive fashion and it may be far more appropriate to empower MIME staff to do field visits rather than armed forces; armed forces can be costly and are limited in their knowledge of mining. An over-reliance on the use of force needs to be cautioned against for various reasons. In many cases around the world, militarized crackdowns have tended not to be effective at reaching the desired objective and have in numerous cases led to exacerbated conflict and loss of reputation for those involved (companies, security forces, government authorities, etc); stakeholders widely suggest that alternative strategies should be pursued where possible.

It is also important to note that legal permission for exploration is not a license to evict local ASM miners (with force, or by any means); a number of interviewees in this study reinforced this caution, stressing that dialogue and public consultation with communities/miners should always pre-empt eviction or security/police interventions. Issues of illegality in the activities of licensed companies (e.g. non-compliance with environmental legislation, or illegal exploitation) should also be considered when prioritizing law enforcement efforts. When investigating allegations of illegality, establishing community-based monitoring and consultation mechanisms can help to

[9] The website www.tambuhaksinta.com (accessed June 1, 2011) provides details on a community outreach campaign established by a gold exploration company in Indonesia and its educational programs with small-scale gold miners. Sulaiman et al (2007) examine United Nations-funded components of these programs.

decide upon which cases require prioritization. As one interviewee stressed, “both national and provincial [government] officers have a crucial role in talking to the communities as part of the process of addressing illegal mining” (Interview, June, 2010).

5.5. Strengthening rural participation in development and researching the “alternative livelihood” proposition

Finally, this study has indicated that renewed efforts at strengthening rural participation in resource governance processes would be an indispensable step towards mitigating problems of poor environmental management, conflict and other rural labour concerns in mining areas. There is evidently substantial variation in levels of participation that rural communities have in resource management decision-making and mining development processes. To address the risks of mining effectively, various interviewees suggest that new government policies should be developed to include national guidelines that would ensure that miners (whether large-scale or small-scale) engage responsible practices. When it comes to creating assurances that the local community benefits from mining, some companies are noticeably better than others; in any cases where multiple different miners (e.g. large-scale, small-scale and artisanal miners) are in conflict with one another, setting up a contextual review process could help to ensure that best practices are mainstreamed and that regional government authorities are adequately informed about the issues to manage the risks effectively. Developing practical planning initiatives in collaboration with rural stakeholders could help harmonize national development planning with rural district level planning. Participatory district level meetings could help to determine appropriate strategies for licensing small-scale mining, whether/how alternative livelihoods could be promoted in ASM areas and whether resettlement of ASM workers is a viable option. Such meetings could also help to identify how ASM sector monitoring could be improved locally, whether/how indigenous small-scale mining could co-exist with mining companies and how to prioritize efforts for sound environmental stewardship.

It is beyond the scope of the present study to assess specific resource ownership disputes or specific compensation schemes for communities, though it is worth noting that various interviewees suggested that, in some cases, ASM workers and companies have resource/land ownership disputes that depend in part on the interpretation of laws and institutional mediation procedures. Past reports have stressed that legal ambiguity about compensation and resettlement protocols can be addressed through sensitive policy consultation processes (IPNN, 2010). The interviews in my study emphasize that, among other issues to consider when addressing compensation/resettlement issues, it is important for governments and companies to focus on funding skill-development training and employment programs for small-scale miners who might be relocated to a new area (particularly if the new area does not have gold deposits and requires switching to a new job). Rigorous assessments of regional socioeconomic priorities could help immeasurably in gaining an understanding of potential prospects for promoting alternative livelihoods besides ASM or for improving local organization in the ASM activities. In Cambodia, the proposition that "promoting alternative livelihoods" might work effectively to bring artisanal miners into new professions has yet to be tested empirically by researchers. Two studies in previous issues of the *Journal of Rural Studies* (Hilson, 2010; Maconachie and Binns, 2007) give particular attention to why critical research on "alternative livelihood" prospects in ASM areas is vital in order to understand linkages between mining economies and other rural economies in Africa. These studies give nuanced attention to poorer miners' perspectives in heavily mineral-dependent regions, and similar studies in Cambodia would be critically important in the future in order to better understand labour demographics and contextual barriers to/possibilities for effective rural planning.

At the same time, dialogue with companies and communities on a case-by-case basis could also be pursued by policymakers to promote company commitments for assisting small-scale miners. While government and international donor support to conduct regional socioeconomic assessments may be needed, some stakeholder consultation techniques that can be deployed by mine management or coordinated by local officials include the following (adapted from

Hilson, 2002a; 2002b): (1) arranged visits to mine sites (large-scale and/or small-scale) the aim of which would be to show residents how the mines are making use of the land, what environmental protection measures are being used to prevent contamination, and what opportunities exist for increasing employment opportunities; (2) attitudinal surveys and studies to encourage a participatory process of obtaining baseline information from communities on key land management issues related to different kinds of mining and; (3) public meetings - perhaps the most obvious and useful of strategies, whereby communities are informed about a formal gathering with representatives from government and other agencies and where residents can voice concerns and identify solutions.

6. Conclusion: Future Partnerships and Research in Poorer Rural Areas

This study has examined why the notion of illegal mining needs to be rigorously examined as a multi-faceted phenomenon in order to develop effective research and development trajectories in rural Cambodia. As Cambodian government authorities are limited in the form of staff, funds, and equipment, new efforts at building links with university institutions and international development institutions could be of crucial importance to help to build further linkages to support rural capacity-building and research on ASM issues. Research partnerships could identify specific opportunities for skill-building and rural planning, on issues ranging from environmental risk management and safety to organizational strengthening, livelihood decision-making and economic diversification in remote areas. While targeted region-specific research may be needed to develop capacity building to encourage new livelihood opportunities, research could target the prevention of or mediation of conflict between ASM workers and companies and community-based monitoring in addition to the other policy issues noted above. Lesson-leaning between different districts could help to generate insight on strengths and weaknesses of different ASM management approaches. As the government recently initiated plans to re-open the Faculty of Geology and university training courses on mining in Phnom Penh (a program that had been closed since the 1990s), the

preparation of curriculum designs for this could be seized as an important opportunity to build international and regional partnerships that enhance skills and knowledge for managing ASM-related challenges. As geological research on its own will not necessarily lead to effective mining policies, researching diverse perspectives on rural socioeconomic challenges needs to be a priority and interdisciplinary approaches for studying rural extraction zones are vital.

Short term and long term strategies for research could be developed to extend upon many of the specific findings and analyses of this study. Recognizing that priorities in studying the mining sector need to be adaptable in order to suit local needs, participatory action research on ASM issues that integrates assessment, capacity-building and consensus-building (linking government institutions, researchers, technical specialists and communities) may have a key role to play. By closely involving diverse stakeholders (women, men, youth, etc.), such processes could generate innovative new ways to overcome socioeconomic and environmental challenges and move towards the policy goal of effective and equitable mineral resource management. To contribute in a meaningful way, future research on mining sector risks and labour practices needs to be pursued by giving careful attention to diverse rural contexts and rural voices in these discussions and learning processes.

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